Model Profile for 1.0 ha Cashew Cultivation

1. Introduction

Cashew (*Anacardium occidentale*), a native of Brazil, was introduced in India during the later half of the Sixteenth Century for the purpose of afforestation and soil conservation. From its humble beginning as a crop intended to check soil erosion, cashew has emerged as a major foreign exchange earner next only to tea and coffee. Cashew nut is one of the important nuts grown in the world and ranked first. Among various nuts such as hazelnuts, almonds, etc., cashew nut enjoys an unenviable position and it is an unavoidable snack in all important social functions especially in the western countries.

2. Scope for Cashew Cultivation and its National Importance

Commercial cultivation of cashew is taken up in eight states of our country mainly in west and eastern coast viz., Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Orissa, Tamilnadu and West Bengal. In addition, cashew is also grown in few pockets of Assam, Chhattisgarh, Gujarat, Meghalaya, Nagaland and Tripura. India has an area of 9.53 lakh ha (2010-11) under cashew with an estimated annual production of about 6.74 lakh tonnes of raw cashew nut. India is the third largest producer and exporter of cashew in the world next only to Vietnam and Nigeria. It is the second largest consumer of cashew and also the biggest processor with highest acreage under the crop. The current cashew production of the country accounts for 23.0% of the global production. A large number of small and marginal farmers, especially living on the coastal belts of India, depend on cashew for their livelihood. Nearly 2.00 lakh workers, more than 90% of whom are women, are directly employed in cashew processing factories which are concentrated mostly in Kerala, Andhra Pradesh and Maharashtra. It is estimated that nearly two million people are involved, directly and indirectly in cashew cultivation, processing and marketing.

Cashew cultivation is taken up in small and marginal holdings and as more than 70% of the cashew area is under this category, cashew plays an important role in the development of small and marginal farmers.

3. Technical Requirements of Cashew Cultivation

3.1 Soil

The general notion is that "cashew is very modest in its soil requirements and can adapt itself to varying soil conditions without impairing productivity". While Cashew can be grown in poor soils, its performance would be much better on good soils. The best soils for cashew are deep and well-drained sandy loams without a hard pan. Cashew also thrives on pure sandy soils, although mineral deficiencies are more likely to occur. Water stagnation and flooding are not congenial for cashew. Heavy clay soils with poor drainage and soils with pH more than 8.0 are not suitable for cashew cultivation. Excessive alkaline and saline soils also do not support its growth. Red sandy loam, lateritic soils and coastal sands with slightly acidic pH are best for cashew.

3.2 Climate

Cashew is a tropical plant and can thrive even at high temperatures. Young plants are sensitive to frost. The distribution of cashew is restricted to altitudes upto 700 m above mean sea level where the temperature does not fall below 20°C for prolonged period. Areas where the temperatures range from 20 to 30°C with an annual precipitation of 1000 - 2000 mm are ideal for cashew growing. However, temperatures above 36°C between the flowering and fruiting period could adversely affect the fruit setting and retention. Heavy rainfall, evenly distributed throughout the year is not favourable though the trees may grow and sometimes set fruit. Cashew needs a climate with a well-defined dry season of at least four months to produce the best yields. Coincidence of excessive rainfall and high relative humidity with flowering may result in flower/fruit drop and heavy incidence of fungal diseases.

3.3 Varieties

The research programmes on crop improvement had resulted in identification of elite materials with yield potential ranging between 20-25 kg of nuts per tree. Several varieties have been released by the different co-ordinating centres of Indian Council of Agricultural Research (ICAR). All the Agricultural Universities and Research Centres have established bud wood bank with the released varieties of respective centres for further multiplication and distribution. The cashew varieties recommended for different states are given in the Table 1.

State	Variety
Andhra Pradesh	BPP 4, BPP 6, BPP 8
Karnataka	Chintamani 1, Chintamani 2, Dhana (H – 1608), NRCC Selection 2, Bhaskara, Ullal 1, Ullal 3, Ullal 4, UN 50, Vengurla 4 &Vengurla 7
Kerala	Dhana, K 22-1, Madakkathara 1, Madakkathara 2, Kanaka, Amrutha and Priyanka
Madhya Pradesh	T No. 40 &Vengurla - 4
Maharashtra	Vengurla 1, Vengurla 4, Vengurla 6 &Vengurla 7

Goa	Goa 1, Goa 2, Vengurla 1, Vengurla 4, Vengurla 6 &Vengurla 7
Orissa	Bhubaneswar 1, BPP 8 &Dhana
Tamil Nadu	VRI 1 & VRI 5
West Bengal	Jhargram 1 & BPP 8

3.4 Planting material

Cashew is a cross pollinated crop and exhibits wide variation in respect of nut, apple and yield of seedling progenies. Therefore, vegetative propagation has been advocated to mitigate this problem. Air layering has been quite successful but survival percentage is low and it has been reported that the plantations raised from air layers are more susceptible to drought and the life of such plantation is shorter as compared to that of grafted or seedling ones. The anchorage has also been observed to be poor, especially in cyclone prone areas. Epicotyl grafting and softwood grafting are found to be successful because it is easy to produce large number of grafts in a short time. The percentage of field establishment is also reported to be high with these grafts. Adequate thrust has been given to produce enough planting material through these standardised techniques by the ICAR (through the Directorate of Cashew Research, its sub-stations, Agricultural Universities and State Departments of Horticulture/Agriculture), to meet the growing demand. Production of cashew planting material is one of the economic activities in most of the states. The planting material is raised in these nurseries within a year. The farmers can purchase planting material from these nurseries but care should be taken that the planting material is purchased from authentic and certified nurseries. The supplier should have the details like age of the plant, variety of the cashew, rootstock used etc. and the same should be mentioned in the bill/ cash receipt.

3.5 Preparation of Land

The land should be ploughed thoroughly and levelled in case of agricultural lands. In case of forestlands, the jungle should be cleared well in advance and the debris burnt. After clearing the jungles, land is to be terraced or bunds constructed on sloppy land. In order to ensure better moisture conservation, soil trenches are dug across the contours. The cost of land preparation will vary depending upon the type and method of soil working. Nowadays, use of JCB for soil working is most popular; hence a provision for use of soil working is made in the model. The land preparation work should be completed prior to the onset of monsoon season i.e. during May – June.

3.6 Layout

Cashew trees are generally planted with a spacing of 7 to 9 meters adopting square system. A spacing of 7.5 m X 7.5 m (175 plants/ ha) or 8 m X 8 m (156 plants/ ha) is recommended. High density planting of cashew at a closer spacing of 4 m X 4 m (625 plants/ ha) in the beginning and thinning out

in stages to maintain a final spacing of 8 m X 8 m in the tenth year is also recommended. This enables higher returns during initial years. In case of sloppy lands, the triangular system of planting is recommended to accommodate 15 per cent more plants without affecting the growth and development of the trees. In undulating areas, the planting should preferably be done along the contours, with cradle pits or trenches provided at requisite spacing in a staggered manner to arrest soil erosion and help moisture conservation.

3.7 Digging and filling of pits

The work of digging of pits has to be completed much in advance (May – June). Cashew can be planted in pits of 60cm x 60cm x 60cm size in soils with normal strata. In hard lateritic soils, pits of 1m x 1m x 1m size are recommended. The top soil and sub-soil are kept separately and allowed to wither under sun. It helps in migration of termites and ants. Burning of the debris and forest wastes inside the pits before planting is advantageous. The pits are then filled with topsoil mixed with farmyard manure or compost (5 kg) or poultry manure (2 kg) and rock phosphate (200 g). In order to mitigate soil borne diseases, BHC @ 100g/ pit is also added to the soil mixture.

3.8 Planting

The grafted plants obtained from the superior mother plant are usually planted at the onset of monsoon. It is essential to provide stakes and temporary shade with the locally available materials wherever necessary (especially in the South West aspects in case of forest plantation) to reduce the mortality rate and achieve quicker establishment. If the monsoon rains are inadequate, one or two pot irrigation can be done during the initial stages to ensure establishment.

3.9 Mulching

The cashew is generally planted on the wastelands and hence availability of soil moisture is always low, hence, mulching is essential. Mulching with black polythene is beneficial to increase the growth and yield of cashew. However, locally available materials like green or dry grass or weeds can be utilized for mulching the basins. Small pebbles or stones can also be used for mulching of the basin. The plastic or stone mulch does not improve soil health but ensures better moisture retention in the soil and also prevents attack of soil borne insects and pests.

3.10 Manuring and fertilization

In our country, application of manures and fertilizers is very limited in the case of Cashew. In order to get better yield, it is essential to maintain adequate N:P:K ratio in the soil. Application of 10-15 kg of farmyard manure per plant is recommended to ensure adequate organic matter in the soil. The fertilizers recommended for a mature cashew tree are 500 g N (1.1 kg urea), 125 g P_2O_5 (750 g Single

Super Phosphate and 125 g K_2O (200 g muriate of potash). The nutritional requirements and the quantity of fertilizer per plant are given in Table 2.

Table 2. Nutritional requirements and recommended fertilizer doses for cashew

Age	Urea (g)	SSP (g)	MOP (g)
1 st Year	**375**	**275**	**75**
2 nd year	**750**	**525**	**150**
3 rd year	**1100**	**750**	**200**

The ideal time for application of fertilizer is immediately after the cessation of heavy rains. Fertilisers should be applied in a circular trench along the drip line. Before application of fertilizer it should be ensured that there is adequate soil moisture. The fertilizers should be applied in two split doses during pre-monsoon (May – June) and post monsoon (September – October) season. However, in the case of single application, it should be done during post monsoon season (September – October) when adequate soil moisture is available. In sandy and laterite soils, soils of sloppy land and in heavy rainfall zones, the fertilizer application should be done in a circular trench of 25 cm width and 15 cm depth at 1.5m from the tree trunk. In red loamy soils and in low rainfall areas (east coast), the fertilizers should be applied in circular bands at a distance of 0.5m, 0.7m, 1.0m and 1.5m away from the trunk during first, second, third and fourth year onwards of planting, respectively.

3.11 Weeding

Weeding with a light digging should preferably be done before the end of rainy reason. Hoeing, cutting the weeds off underground is more effective than slashing. Chemical weeding has not been of any importance until now, however it may be considered as an alternative, where wages are high or where there is shortage of labour. Initially, Agrodar-96 (2, 4 –D) @4ml/litre of water and subsequently Gramaxone @5ml/litre of water is sprayed. Approximately, 400 litre/ha (160 litre/acre) of solution is required per spray. The spray is again repeated in the post monsoon season.

3.12 Inter-cropping

Tall growing intercrops like certain varieties of sorghum and millet should not be encouraged between young cashew, as they provide too much shade. Leguminous crops such as groundnut and beans are very suitable for inter cropping. Besides the annual crops, arid zone fruit crops having less canopy especially annona, phalsa, etc., can be thought of, depending on the suitability. Cultivation of horse gram, cowpea, groundnut etc is recommended as inter-crops in cashew. Inter cropping cashew, *Casuarina* and coconut are popular.

3.13 Cover cropping

Leguminous cover enriches soil with the plant nutrients and adds organic matter, prevent soil erosion and conserves moisture. The seeds of these cover crops may be sown in the beginning of rainy season. The seed beds of 30cm X 30cm size are prepared in the interspace in slopes by loosening soil and mixing a little quantity of compost. The seeds of these crops are sown in the beds and covered with a thin layer of soil. The seeds should be soaked in the water for six hours before sowing.

3.14 Training and Pruning

During first year of planting, the sprouts coming from the rootstock should be removed frequently to ensure better health of the plant. These sprouts eat up valuable plant nutrition and also cause death of grafted scion allowing only rootstock to grow. Initial, training and pruning of cashew plants during first 3-4 years is essential for providing proper shape to the trees. The trees are shaped by removing lower branches and water shoots coming from the base during first 3-4 years. Thereafter, little or no pruning is necessary. The plant should be allowed to grow by maintaining a single stem up to 0.75-1.0 m from the ground level. Weak and criss-cross branches are also chopped off. In order to avoid lodging of the plant by wind, proper staking of plant is essential. After 4-5 years, the main stem is detopped to a height of 4-5 m from the ground level. Thereafter, regular removal of dried/ dead wood, criss-cross branches and water shoots once in 2-3 year is done to keep the plant healthy. The training and pruning of cashew plants is done during August – September. The cut surfaces are smeared with Bordeaux paste.

The flowers appearing during first and second year of planting should be removed (de-blossoming) and plants should be allowed to bear fruits only after third year.

3.15 Top working

Better management practices may increase the yields marginally but boosting cashew production 3-4 folds in a short span of time is perhaps possible only by "genetic transformation" of the existing plantations with high yielding varieties. It is reported that this genetic transformation can be effected through top working. The rejuvenation of unthrift cashew plantations through top working involves beheading of trees, allowing juvenile shoots to start-out and taking up of in-situ grafting using procured scions of high yielding varieties. Periods from November to March and February to June have been found to be ideal for beheading and in-situ grafting respectively. It has been observed that the top worked trees within a period of two years have not only put forth a canopy of 3-4 m in diameter and 5-6 m in height (as that of 8-10 year old trees) but also have given an yield of 3 to 5 kg nuts per tree in their first bearing itself.

3.16 Pests and Diseases

3.16.1 Pests

It is observed that there are about 30 species of insects infesting cashew. Out of these tea mosquito, flower thrips, stem and root borer and fruit and nut borer are the major pests, which are reported to cause around 30% loss in yield.

Tea Mosquito

The nymphs and the adults of tea mosquito (*Helopeltis spp*.) suck sap on the tender leaves, shoots and inflorescence and even young nuts and apples. The saliva of the insect is very toxic, which causes blistering at the site of infestation. Severe attack on the young shoots cause dieback. Attacked inflorescence usually can be recognised from a distance by their scorched appearance. Tea mosquito population builds up during the beginning of the rainy season, when the cashew tree is full of new flush.

Tea mosquito can be controlled by spraying carbaryl 0.1.% or phosalone 0.07% or dimethoate 0.05%. Spraying should be done thrice, first at the time of flushing, second at early flowering and third at the time of fruit set.

Thrips

Both nymphs and adults suck and scrape at the underside of the leaves, mainly along main veins, causing yellowish patches, latter turning grey, giving the leaves a silvery appearance. The thrips are more active during the dry season. 0.05% monocrotophos or 0.1% carbaryl are very effective for controlling thrips.

Stem and Root Borers

The young white grubs bore into the fresh tissues of the bark of the trunk and roots and feed on the subsequent subepidermal tissues and make tunnels in irregular directions. Due to severe damage to the vascular tissue the sap flow is arrested and the stem is weakened. The characteristic symptoms of damage include the presence of small holes in the collar region, gummosis, yellowing and shedding of the leaves and drying of the twigs. Once the plant is infested complete control of this pest is very difficult. However, prophylactic measures for its control can be adopted with 0.1% BHC swabbing twice a year, once in April-May and the second application during November.

Fruit and Nut Borers

The young caterpillar bores through the apple and nut causing deformity and /or loss of kernel weight. Spraying of monocrotophos - 0.05% concentration at flowering and fruit setting is recommended.

3.16.2 Diseases

Fortunately cashew crop does not have any serious disease problem except the powdery mildew caused by a fungus, which affects the young twigs and inflorescence and makes it wither. This disease generally appears when the weather becomes cloudy. Control can be obtained by dusting with 2% sulphur W.P.

3.17 Harvesting and Yield

Cashew plants start bearing after three years of planting and reach full bearing during tenth year and continue giving remunerative yields for another 20 years. The cashew nuts are harvested during February – May. Normally, harvesting consists of picking of nuts that have dropped to the ground after maturing. However, if the apples are also used for making jam, juice, syrup, Fenni, etc., the fruit has to be harvested before it falls naturally. The cashew apples are removed and the nuts are dried in sun for 2-3 days to bring the moisture level from 25 per cent to 9 per cent. The maturity of the cashew nut is tested by floatation method. The mature nuts sink in water while the immature/ unfilled ones float. The nuts are collected at weekly intervals from the farm during the harvesting season. During that period the land should be clean in order to facilitate collection of cashew. Plantations of unknown origin or seedling progenies with conventional methods of cultivation yield less than one kg of raw nuts per tree. However, there is a chance to increase the yield up to 4 to 5 kg per tree with the adoption of improved production techniques, over a period of 4 to 5 years. In new plantations, with the use of elite planting material coupled with a package of improved agronomic practices, a yield of 8-10 kg per tree could be achieved.

3.18 Marketing

Marketing of raw cashew is not a problem in view of the fact that our raw material production is considerably low (around 6.74 lakh t) when compared to the processing capacity of our existing factories (around 7.0 lakh t developed so far). The raw cashew nuts fetch a price of Rs.65-70 per kg in the internal market.

3.19 Processing

The processing of cashew involves the following steps :

- Preliminary cleaning
- Roasting
- Shelling and separation

- Drying

- Peeling

Preliminary cleaning of cashew nuts is done by manual picking of large objects and by sieving. The cleaned cashew nut is roasted in open pan or earthen ware or rotary cylinder or hot oil bath. The first two methods are simple and cheap, but they are time consuming and lead to poor recovery of CNSL (Cashew Nut Shell Liquid). The rotary cylinder method is more hygienic and efficient, but a major portion of the CNSL would be lost. The hot oil bath process combines good roasting and recovery of shell liquid. The cleaned cashew nuts are placed in wire baskets and immersed in a tank containing CNSL, boiling at a constant temperature of about 180-200°C for about 60 to 90 seconds. The CNSL in the tank should be stirred continuously to avoid local overheating and excessive polymerization and clogging. However, the hot oil bath processing is costlier, and is resorted to only by a few processors. The most common method adopted is roasting by rotary cylinder method. After roasting, the shells are removed and the nuts extracted manually. In manual shelling, recovery of whole kernels is more compared to the mechanical shelling. The kernels are dried in hot air chambers which facilitates peeling of the outer coating or testa. To prevent breakage, the kernels are to be handled very carefully, as they are brittle at this stage. The shelling percentage of cashew varies between 20-25.

3.20 Grading and Packing

Grading is done for export purposes based on "counts" or number of kernels per pound. Sound kernels are named as "wholes" and broken ones as "splits". The wholes are again classified as whole white kernels, whole scorched kernels, whole dessert kernels (a) and whole dessert kernels (b). The splits are also further graded into white pieces, scorched pieces, dessert pieces (a) and dessert pieces (b) based on certain physical characters. The wholes are packed in several grades viz., 210, 240, 280, 320, 400, 459 and 500; the popular grade is 320. The specifications for graded kernels are that they should be fully developed, ivory white in colour and should be free from insect damage and black and brown spots. Packing is done in time by Vita pack method (exhausting the air inside the packing tin, pumping in carbon dioxide and sealing).

The techno-economic parameters for the model project are detailed in **Annexure I.**

4. Financial Viability and Bankability

4.1 Project Cost

The cashew tree starts bearing during third year but the income is not sufficient to cover the expenses. Hence, the cost of development upto fourth year is capitalized. The project cost estimated for one ha of cashew plantation is Rs.83800/- and the details are presented in **Annexure II.**

4.2 Margin Money

The margin money / down payment prescribed are 5 %, 10 % and 15% for small, medium and other farmers respectively. The rest of the cost of development will be provided as bank loan. However, in the present model, 10 % of the unit cost i.e. Rs.8400/ha has been considered as margin money.

4.3 Bank Loan

Bank loan of 85 - 95 % of the total cost of development shall be available from the financing institution. Bank loan considered in the model is 90%. It works out to Rs.75400/ha in the model.

4.4 Rate of interest

Banks are free to decide the rate of interest within the overall RBI guidelines issued from time to time. However, the ultimate lending rate has been considered as 12 % for working out the bankability of the model project.

4.5 Security

Banks are guided by RBI guidelines issued from time to time in this regard

4.6 Financial Analysis

Financial analysis was carried out for one hectare of cashew cultivation. For financial analysis, the income was assessed on a conservative basis. The productivity of a ten year old cashew tree is considered at 9 kg of nuts per tree. The detailed calculation of project's income and expenditure has been indicated in **Annexure III.** IRR, NPW and BCR for the model works out to 44 %, Rs. 1,39,588/- and 1.66 respectively and the details are given in **Annexure IV**.

4.7 Repayment period of loan

Based on the cash flow the detailed repayment schedule has been worked out and furnished in the **Annexure V**. The repayment period works out to nine years including three years grace period for repayment of principal.

5. Conclusion

Cashewnut cultivation is a technically feasible, financially viable and bankable activity in the areas identified suitable for it based on agro-climatic conditions.

Annexure I : Techno-economic parameters

Spacing	7.5 m x 7.5 m
Varieties	Vengurla 4, 6 & 7
Planting Material	Grafts
Plant Population (plants/ha)	178
Land preparation (Rs./ha)	5000.00
Labour (Rs./manday)	200.00
Planting material (Rs./plant)	20.00
Farm Yard Manure (Rs./MT)	1200.00
Urea (Rs./kg)	5.70
Single Super Phosphate (Rs./kg)	5.80
Muriate of Potash(Rs./kg)	16.60
Plant protection material (Rs./litre)	300.00
Sale price of Cashewnut (Rs./kg)	65.00

Annexure II : Project Cost

(Amount in Rs.)

Items	Year				Total
	1	2	3	4	
Land preparation	5000	0	0	0	5000
Digging and filling up of pits	3000	0	0	0	3000
Plant material	4100	0	0	0	4100
Planting and staking	1000	0	0	0	1000
Cost of FYM	3600	3600	4800	4800	16800
Cost of fertilizers	900	1700	2500	2500	7600
Manures & fertilizers application	1400	1400	1600	2000	6400
Irrigation	2000	2000	2400	3000	9400
Plant protection measures	1500	1500	2400	3000	8400
Appl. of plant protection	600	600	800	2000	4000
Interculture	1600	1600	2000	2400	7600
Intercropping	4000	0	0	0	4000
Live fencing	3500	0	0	0	3500
Harvesting	0	0	1000	2000	3000
TOTAL	32200	12400	17500	21700	83800
Rounded off	32200	12400	17500	21700	83800
Margin Money					**8400**
Bank Loan					**75400**

Annexure III : Income - Expenditure Statement

(Amount in Rs.)

Items	Year							
	3	4	5	6	7	8	9	10
Income								
Yield (kg/plant)	1	3	5	6	7	8	8.5	9
Yield (kg/acre)	178	534	890	1068	1246	1424	1513	1602
Income	11570	34710	57850	69420	80990	92560	98345	104130
Expenditure								
Cost of FYM	2000	2000	2000	2000	2000	2000	2000	2000
Cost of fertilizers	2731	2731	2731	2731	2731	2731	2731	2731
Manures & fertilizers application	1600	2000	2000	2000	2000	2000	2000	2000
Irrigation	2400	3000	3000	3000	3000	3000	3000	3000
Plant protection measures	2400	3000	3600	3600	3600	3600	3600	3600
Appl. of plant protection	800	2000	2000	2000	2000	2000	2000	2000
Interculture	2000	2400	2400	2400	2400	2400	2400	2400
Harvesting	1000	2000	2400	2400	2400	2400	2400	2400
Total Expenditure	14931	19131	20131	20131	20131	20131	20131	20131
Rounded off	15000	19000	20000	20000	20000	20000	20000	20000
Surplus	-3430	15710	37850	49420	60990	72560	78345	84130

Annexure IV : Financial Analysis

(Amount in Rs.)

Items	Year											
	1	2	3	4	5	6	7	8	9	10	11	12
Cost of investment	32200	12400	17500	21700	0	0	0	0	0	0	0	0
Maintenance cost	0	0	0	0	21700	21700	21700	21700	21700	21700	21700	21700
Total cost	32200	12400	17500	21700	21700	21700	21700	21700	21700	21700	21700	21700
Benefits	0	0	11570	34710	57850	69420	80990	92560	98345	104130	104130	104130
Net Benefit	-32200	-12400	-5930	13010	36150	47720	59290	70860	76645	82430	82430	82430
D F at 15%	0.87	0.756	0.658	0.572	0.497	0.432	0.375	0.327	0.284	0.247	0.215	1.23
Disc. cost	-28014	-9374	-3902	7442	17967	20615	22234	23171	21767	20360	17722	101389
Disc. benefits	0	0	7613	19854	28751	29989	30371	30267	27930	25720	22388	128080
Net discounted benefits	-28014	-9374	3711.1	12412	10785	9374.4	8138	7095.9	6163	5359.9	4665.5	26691
NPW	139588											
BCR	1.66	: 1										
IRR	44%											

Annexure V : Loan Repayment Schedule

(Amount in Rs.)

Year	Loan O/s at the beginning of the year	Interest@12.0%	Gross surplus	Repayment		Total outgo	Net surplus	Loan O/s at the end of the year
				Principal	Interest			
1	28980	3478	10000	0	3478	0	3478	6522
2	40140	4817	10000	0	4817	0	4817	5183
3	55890	6707	10000	0	6707	0	6707	3293
4	75420	9050	34710	10000	9050	0	19050	15660
5	65420	7850	36150	15000	7850	0	22850	13300
6	50420	6050	47720	20000	6050	0	26050	21670
7	30420	3650	59290	30420	3650	0	34070	25220

* Income from intercrop taken into account for first 3 years